HIRSCHMANN

PRS 80 Wind Speed

OPERATOR'S / SERVICE MANUAL

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MANUAL REVISIONS

REV	DATE	NAME	DESCRIPTION
-	02/04/05	CSH	ECN 04-152
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C	05/23/06	SB	ECN 06-096

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1   GENERAL INFORMATION

The Hirschmann ECS PRS 80 System has been designed to provide indication from a various types of radio sensors. To simplify operation, this PRS 80 console set up for wind speed only, but can be software upgraded to indication other various types of radio sensors, i.e. A2B, Load, and Angle. System limits can be set by the user; when these limits are exceeded the system will warn the operator by sounding an audible alarm, flashing the backlit LCD and de-energize the lockout relay. A system relay can be connected to the cranes lockout system to provide a lock out when exceeding any of the user limits. The defining the lock out connections are the responsibly of the crane owner.

2   WARNINGS

The Hirschmann ECS PRS 80 System is an operational aid, which warns a crane operator of approaching two-block conditions, which could cause damage to equipment and personal injury.

This device is not, and must not be a substitute for good, sound operator judgment, experience and use of accepted safe crane operating procedures.

The responsibility for the safe operation of the crane remains with the crane operator who must ensure that all warnings and instructions supplied are fully understood and observed.

Prior to operating the crane, the operator must carefully and thoroughly read and understand the information in this manual to ensure that the operation and limitations of the system and the crane are known.

⚠ **WARNING**

The system can only work correctly, if all sensors/transmitters have been properly set. For correct setup, the operator has to answer thoroughly and correctly all questions asked during the setup procedure in accordance with the real rigging state of the crane. To prevent material damage and serious or even fatal accidents, the correct adjustment of the system has to be ensured before starting the crane operation.

Always refer to operational instructions and load charts provided by the crane manufacturer for specific crane operation and load limits.

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3   FEATURES

The Hirschmann ECS PRS 80 has the following features:

- Easily and clearly shows the operator required information.
- Multi language. The system can be setup to display text in both English and Spanish.
- Multiple limits can be set.
- Wireless operation.
- Minimum of 500 feet LOS.
- Frequency Hopping Spread Spectrum transceivers
- Can display in multiple units.
- Built in lockout relay. Rated at 2 amps
- Analog display of % of limit on load cells and wind speed.
- Tare function.
- Low battery indication.
- Expandable

4   SYSTEM DESCRIPTION

4.1   Operating Console

The console has 2 functions:

- Accepts inputs from the crane operator (limits and setup)

- Displays important data and information from the sensors

The operator's console should be mounted in the operator's field of vision.

4.1.1   Liquid Crystal Display

The Liquid Crystal Display (LCD) used in the Hirschmann ECS PRS 80 console is a wide temperature-range graphic display with transflective characteristics that give it a high visibility in sunlight and during backlit night operation. Due to the nature of any LCD, it works on the principle of polarization of light. It should be noted that dual polarizations that are at a certain angle to each other can reduce the amount of light up to completely eliminating it if that angle becomes perpendicular. This can have significance if the operator is wearing polarized sunglasses that happen to be perpendicularly polarized in relation to the LCD's polarization. In this rare case, the operator has to work without sunglasses or find different sunglasses that do not have this characteristic, in order to avoid having the visibility of the display impaired.

The LCD contains an automatic temperature compensation that will adjust the LCD's contrast according to the surrounding temperature.

4.1.2 Control Identification

This unit contains a display and different controls that are described as follows:

1. LCD
2. Clear button
3. Select button
4. Up Button
5. Down Button

Fig 2: *Operator's Console*

Button "SCROLL UP"

- Use this button to increase values or to scroll up.
- Changes which sensors are displayed and how each is displayed.

Button "SCROLL DOWN"

- Use this button to decrease values or to scroll down.
- Changes which sensors are displayed and how each is displayed

Button "SELECT"

- Use this button to enter the menu screen and to confirm selections.

Button "C"

- Generally used to back out of a selection and return to the previous screen.
- While pushing this button, the control lever lockout function of the system can be deactivated.
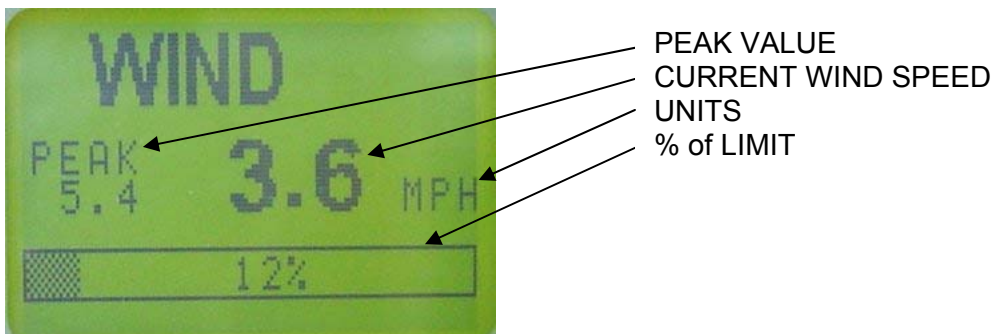- Accesses the Tare function

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⚠ **WARNING**

Since button C can deactivate the lockout function of the system, the following instructions must be obeyed:

- **The by-pass function shall be used with discretion, as unwarranted use of it to override the control lever lockout system can result in harm to the crane and danger to property and persons.**

- **Never use the by-pass function to either overload or operate the crane in a non-permissible range.**

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5   SYSTEM OPERATION

When switching on crane ignition switch, the system starts with an automatic test of the system, of lamps and audible alarm. During the test, the LC display shows the console and system software version. After the testing is complete, the main operating screen will be displayed.

If the wind speed requires setup (installed), refer to the Installation and Setup Section 6.3 sensors procedure allows the operator to input the sensors being used and the limits for the sensors. The operator must complete the setup procedure for each sensor.

PEAK VALUE
CURRENT WIND SPEED
UNITS
% of LIMIT

The speed can be shown in miles per hour, or kilometers per hour.

The % of limit is shown at the bottom.

The peak will be the highest wind speed recorded since the system was started. When the system is

turned off the peak value will be reset. The peak value can also be reset by pressing the button.

Here is the wind speed sensor icon displayed in the system.   Wind Speed Sensor

5.1   MENU'S
❖ LIMITS
❖ SETUP
    ♦   SENSORS
        ▪   WIND SPD
            ❖   INSTALL NEW
            ❖   UNINSTALL
            ❖   ENABLE / DISABLE
    ♦   SCREEN/BEEPER
        ▪   UNITS
            •   LBS - MPH
            •   KG - KPH
        ▪   LANGUAGE
        ▪   PCT BAR IS ON/OFF
        ▪   WARNING ARE ON/OFF
    ♦   DIAGNOSTICS
        ▪   SCREEN
        ▪   KEYPAD
        ▪   OUTPUTS
        ▪   ALARM LOG
        ▪   COMM DATA
        ▪   LOW BATTERIES (This will only be shown if a low battery condition exists)
❖ ABOUT

5.2   Menu Selection Instructions

From the operating screen, press   to enter the menu selection.

Use the up   and down   to scroll through and high light your selection then press   to make the selection.

5.3   Limits

The system sets the default speed limit to 30 mph. This is represented in by the bar graph. The bar graph shows the % of the limit that is set. The limit can be set to other values.

To change the default limit, press   , and then select the sensor for the limit that you want to set.

Use the arrows to change the value. Use the   to confirm the values.

Note: a prewarning can be set so as to beep the alarm when a limit is approached but not reached. This is set with the warning option. Menu- SETUP/ SCREEN/BEEPER/ WARNING.
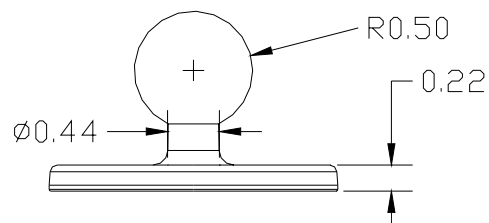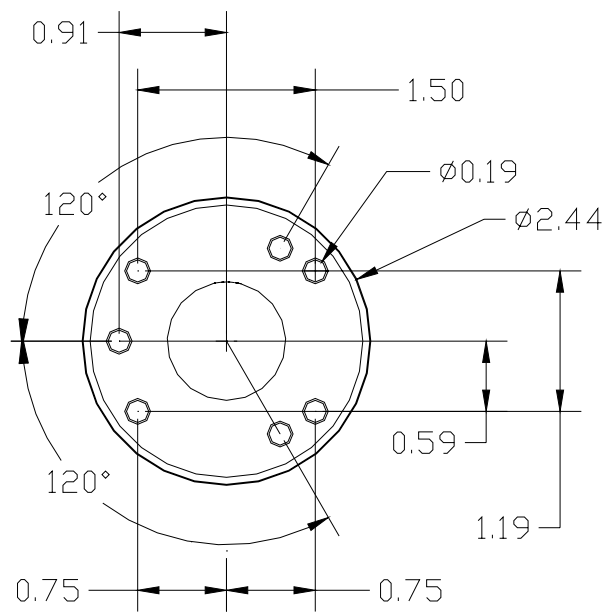
6   INSTALLATION AND SETUP

6.1   Console Mounting

The console has a mount that allows the console to be swiveled into any direction and to be mounted in a variety of locations and on nearly any surface.
Choose a location that is in line of site of the sensor and within reach of the operator. Securely attach the base of the mounting apparatus onto a solid surface. The console has a mount that allows the console to be swiveled into any direction and to be mounted in a variety of locations and on nearly any surface.
The power supply can be from 12- 24 volt DC. The lockout wire supplies power to operate external solenoids, or relays. The rating of the lockout is 2 amps. An internal fuse protects against overloading this circuit.

Power

6.2   Wiring
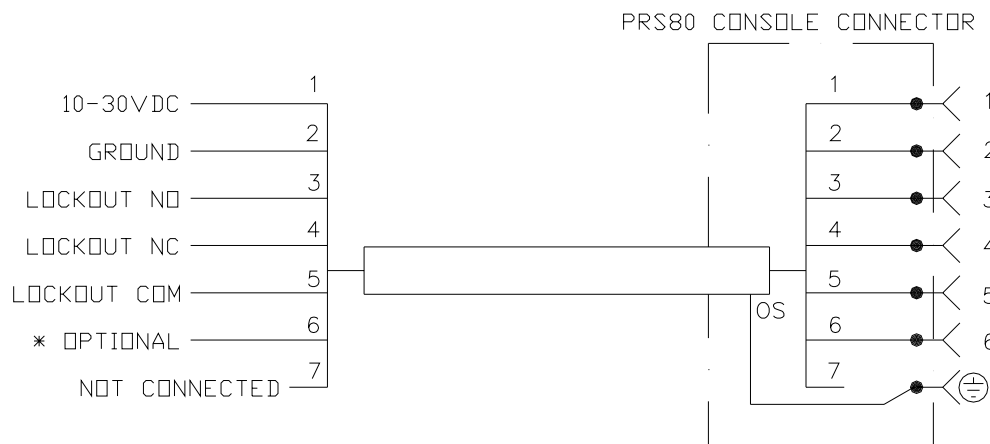

The wiring at the console connection is:

Pin #   Description
#1-   Power   10-30VDC
#2-   Ground
#3-   Lockout NO   2 amp max
#4-   Lockout NC   2 amp max
#5-   Lockout common   2 amp max
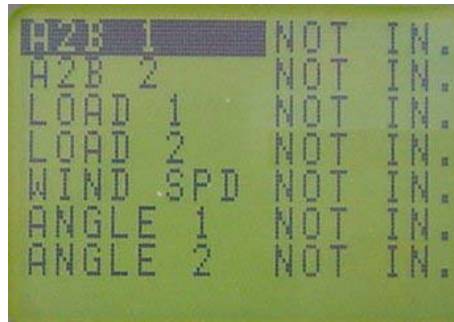#6-   Option

6.3   Adding sensors

To add a new sensor,

Menu- SETUP/SENSORS/

This gives the sensor select/information screen. It shows the status of all hardware. In the example below "NOT IN." means that none of the sensors are installed.

Sensor status screen.

Choose the sensor that you wish to install and follow the onscreen instructions, which will ask you to remove the paper tap insulating the battery contact or installing the batteries into the transmitter. To do this, remove the 4 screws from the transmitter housing and remove the paper insulation tag that reads "REMOVE BEFORE OPERATION" by holding the batteries in place with one hand and removing the tag with the other or insert batteries, if not installed.

LOOSEN 4 SCREWS

6.4   Wind Speed Sensor

The sensor is delivered with a bracket support that allows the sensor to stay perpendicular to the ground through the boom angle range.

⚠ **WARNING**

CONTACT CRANE MANUFACTURER FOR WELDING INSTRUCTIONS PRIOR TO WELDING ON BOOM.

The mounting pole is affixed to the boom tip at your discretion so that the anemometer sensor is mounted approximately a foot higher than the boom sheaves and will not interfere or be damaged by hoist lines or extension mounting or movement. Affix the mounting pole to the boom tip or possibly the length cable anchor pin so the pipe supports the sensor. It must be installed so that no part of the crane can disrupt the measurement of wind.
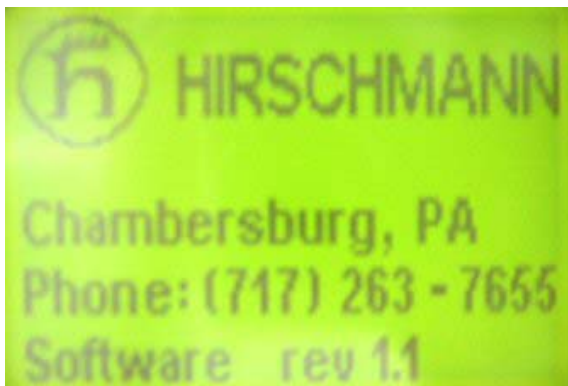
7   SERVICE / TROUBLESHOOTING

Daily maintenance of the system consists of inspecting:

1. The electrical wiring connecting the various parts of the system.
    If electrical wiring is damaged, it shall be replaced immediately.
2. If the insulation is worn on the electrical wiring or cable guides are damaged, these parts shall be replaced.
3. A damaged or punctured display must be replaced immediately to prevent ingress of water and damage to the internal circuitry.

Other than correcting the problems identified in the Malfunctions Table and replacing faulty mechanical parts and cables, no other repairs shall be performed by non-expert personnel.
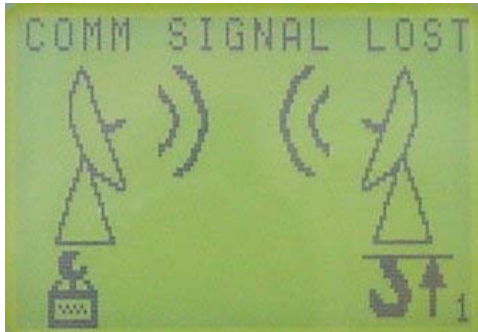
When the Hirschmann ECS PRS 80 system is turned on, it will show the following screen. This screen shows the telephone number of Hirschmann ECS and the software version.

Make sure the display is working and all the lights come on during this time. Listen to the buzzer sound. If any of the components above fails, please contact your nearest service representative before operating the system!

7.1   Screens

Communication error screen

This screen shows that there is an error in the communication between the sensor / sensors and the console. The sensor that is in error is indicated with the icon at the bottom of the screen. In the example, both the load and the A2B 1 are in error. Only the sensors that communication error are shown.

7.2   Diagnostics

There are several diagnostics screens that can be accessed thru the display. However, it is possible that a malfunction can cause the displays to be inaccessible. In this case follow the troubleshooting section of the manual.

7.2.1   To Test the Display:

Menu- SETUP/ DIAGNOSTICS/ SCREEN.

Various test screens will be displayed by pressing the   button. Press   to go to the next screen. Note any problems in the display.

7.2.2   To Test the buttons:
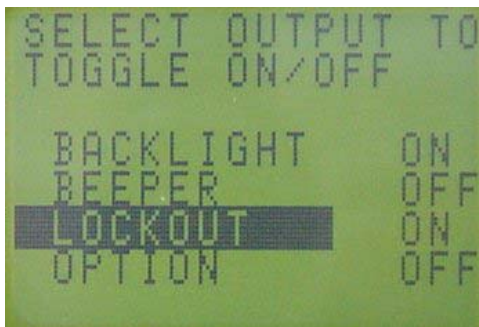
Press

Menu- SETUP/ DIAGNOSTICS/ BUTTONS.

When a button is pressed, the corresponding button on the console will invert. Press each button one at a time. When finished, press and hold "C".

7.2.3   To Test the outputs:

Press

Menu- SETUP/ DIAGNOSTICS/ OUTPUTS.
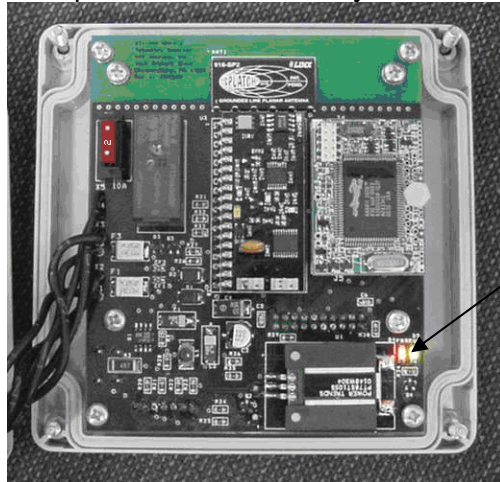

Arrow to select an output to test. Press   to test the selected output. The state of the output will

change when the   button is pressed. The status indicator text will also change when the   button is pressed.

7.3   No Display

The only time you should need to open the console is when there is power to the console and the display is blank. If you find it necessary to open the console, inspect the gasket for damages and replace it if necessary, refer to Section 7.4 Troubleshooting Moisture.

With power to the console you should see the following:

Indicator LED's
RED = POWER
FLASHING GREEN = OK

If the LED's, are not working, replace the console. Note: the 2A fuse protects output relay in case current over draw. The board is protected by a 0.5A resettable fuse.

7.4   Troubleshooting Moisture

The receiver contains electronic components and has an IP65 protection rating. These electronic components cannot be designed to withstand exposure to moisture over a longer period of time. If you find water or moisture inside any of the housings, the source for the water ingress has to be detected and corrected to ensure proper operation.

There are two major possibilities for the occurrence of excessive moisture inside an enclosure:
1) Water ingress; caused by a cracked or broken housing or lid, or a defective gasket.
2) Condensation

This outline gives instructions for detecting the cause for excessive moisture by using simple troubleshooting methods and how to prevent the moisture ingress from happening again.

7.5   Troubleshooting Chart

After the onboard diagnostics have been performed, follow these guidelines
All LED's are located inside the receiver box.

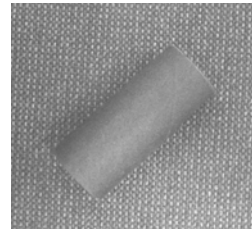| Problem	Cause	Solution
LCD does not light or show characters.	No power to console	Make sure the console is getting power from the crane. Check wiring. Ensure correct polarity of the power. Open console, check status of LED's. Both the red and green LED's should be on.
LCD does not function properly	Faulty LCD	Go into the diagnostics screen for the display. Verify all screens are functioning. If any of the tests fail, replace console
Buttons do not work	Faulty buttons	If possible, go to the diagnostics screen for the buttons. Test the function of each button. If any of the buttons fail, replace the console.
Communication error	Low battery	Verify which sensor is causing the error by looking at the icons on the communication error screen. Replace batteries.
Communication error	Faulty sensor	Verify which sensor is causing the error by looking at the icons on the communication error screen. Verify that the LED on the sensor is blinking.
Communication error	Poor reception	Verify which sensor is causing the error by looking at the icons on the communication error screen. Verify that the LED on the sensor is blinking. Verify that the sensor is line of sight to the console.
Communication error	Sensor not installed.	Install the sensor on the console. See adding sensors
Communication error	Poor communication caused by interference.	Remove potential interference sources from the area. Mount the receiver in a different location.
Horn does not sound	Faulty	Go into the diagnostics screen for the outputs. Verify all outputs are functioning. If any of the tests fail, replace console.
Crane functions locked out all the time	Incorrect wiring	Check for power to lockout device.
Crane functions locked out all the time	Communication error.	See communication error.
Crane functions locked out all the time	Fault in receiver module.	Check relay output voltage on wire number 3.
Transmitter LED does not flash	Sensor is asleep.	Pull switch wire rope. Red LED will flash ~each 2 sec. Replace batteries. Replace transmitter.

8   MAINTENANCE

The only maintenance required is to change the batteries when required. Also, check the mounting hardware daily to ensure that there is no damage. Replace any damaged parts before operating the crane.

8.1   Battery Replacement

To replace the batteries, remove the 4 screws from the transmitter housing. During battery replacement, use caution when opening the battery cover and transmitter to avoid damage to the gasket causing moisture ingress which could corrode the batteries and terminals.   Inspect the gasket surface on the transmitter for nicks or other damages that may prevent the gasket from sealing. If it appears to be damaged, a replacement gasket should be installed.

 Install 4 fresh batteries into the proper location and direction as indicated on the battery holder.

Make sure that the cardboard tube is installed as shown.

| Loosen 4 Screws | Inspect Condition of Gasket | Battery Direction Label | Installed Batteries in Cardboard Tube. |

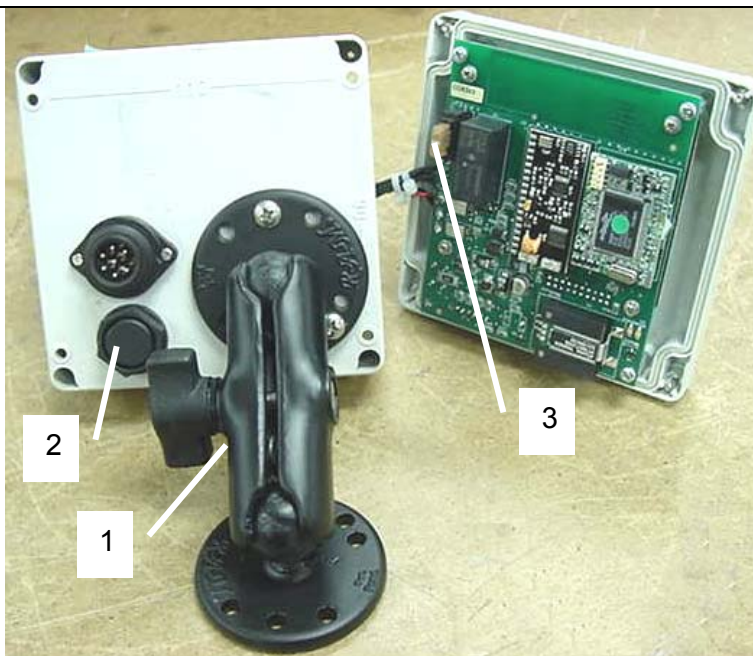After removing the cover visually inspect the gasket for damages.
Insert the new batteries and cardboard sleeves. Ensure the LED starts to flashing, when the batteries are first install for a wind speed transmitter. LED comes on for 1 second, off 1 sec and back on for 1 sec, then begins to flash. Visually inspect the gasket and tighten the battery cover in place with the 4 cover screws.
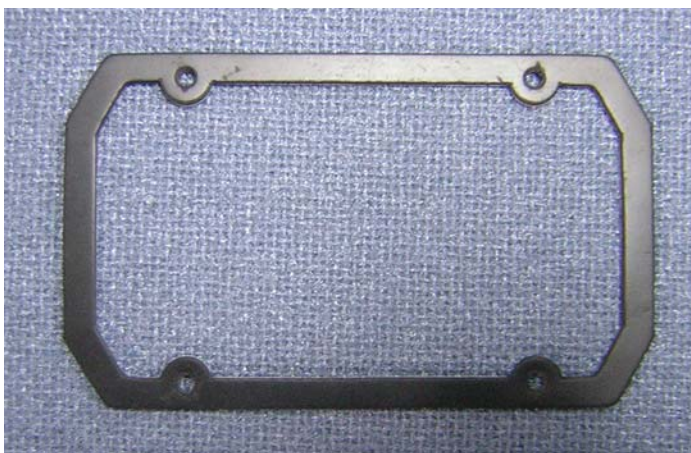
9   PART NUMBERS

CONSOLE

031-300-060-584
PRS80 Console

Item Part number Qty Description
1. 031-300-060-382 1.0 Mounting Arm W/1" Ball
2. 024-000-100-095 1.0 Membrane Element
3. 031-300-050-223 1.0 Fuse, 2 Amp Auto (Mini)

031-300-060-491
cable assembly for PRS80 console

031-300-050-763
Neoprene rubber gasket

031-300-050-671 ANTENNA, 918 MHz FOR
TRS05ASSEMBLY 060-576 WHIP ELEMENT

031-300-060-584 CONSOLE, PRS80 RADIO
RECEIVER LOAD/A2B/WIND/ANGLE 20AWG PWR

031-300-050-672 ANTENNA , 918
MHz MAGNETICBASE 13' long wire

031-300-060-607 SENSOR ASSY,
WINDSPEED RADIO MTG PLATE SPREAD
SPECTRUM L-B

031-300-050-688 ANTENNA,
918 MHz RCL 90°